

## Heilig, John A

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**From:** McDonald, Patrick D  
**Sent:** Thursday, September 09, 2010 8:55 AM  
**To:** Lauritzen, Carl A; Tutt, John C  
**Subject:** FW: AMS-02 RID status

Carl, Chris,  
Here is what I sent Bobby Brown for the status of my RID's.

Patrick D. McDonald  
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**From:** McDonald, Patrick D  
**Sent:** Wednesday, September 01, 2010 5:01 PM  
**To:** 'Brown, Bobby G. (JSC-MO211)'; Maculo, Martin S  
**Cc:** Ng, Tony; Romine, Paul (JSC-ES611)  
**Subject:** RE: AMS-02 RID status

Bobby,  
I submitted six RID's. Five of them are shown with a status of closed. One remains open.

RID: The fracture control and fatigue requirements must be satisfied for the new and redesigned structural components of AMS-02.

Status: CLOSED. The fracture analysis will be submitted when the final stress and fracture analysis reports are complete.

RID: The vacuum case is no longer an evacuated system. The environments, loads, and stresses for the vacuum case have changed.

Status: CLOSED. AMS project indicates that the vacuum case is now vented adequately to prevent any differential pressure from arising. No further action is required.

RID: The structural certification of the permanent magnet was performed for an earlier flight with different flight environments.

Status: CLOSED. AMS has submitted documentation to the SWG showing that the static strength test performed for the earlier flight of the permanent magnet was to higher levels than the expected flight environment for STS-134, and that the stress analysis was performed to higher design loads than the expected flight loads for STS-134, and that the margins of safety for the design loads were positive.

RID: The CDR package indicates that factors of safety of 1.1 on yield and 1.4 on ultimate will be used for existing structure that has been test verified. However, at the STS-134 VLA-1 VADAR, the Structures Working Group levied additional Static Test Uncertainty Factors (STUFs) for the stress analysis of specific critical existing structural components. These factors remain applicable unless appropriate technical rationale is provided.

Status: OPEN. RID remains open pending release of final stress report showing positive margins of safety with the required factors of safety.

RID: The CDR package states that the static strength test results are still valid. However, flight load environments and the AMS-02 structure have undergone significant changes since the static strength test was performed. No evidence has been provided to demonstrate that existing static test levels and model correlation results remain valid.

Status: CLOSED. The RID is closed to the VAR and PSRP review process. The AMS-02 project will provide data and information to demonstrate that the changes to the hardware have not invalidated the static strength test. This activity will be coordinated with the SWG.

RID: The CDR package indicates that the flight vacuum case was replaced with the Structural Test Article (STA) vacuum case. The structural life of the STA must be evaluated to ensure that adequate life remains after the structural testing accounting for the expected flight environments and including the required scatter factor.

Status: CLOSED. The revised vacuum case will be analyzed to account for the changes in the loads and appropriate documentation will be provided.

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**From:** Brown, Bobby G. (JSC-MO211) [mailto:bobby.g.brown@nasa.gov]  
**Sent:** Wednesday, September 01, 2010 4:00 PM  
**To:** Maculo, Martin S; McDonald, Patrick D  
**Cc:** Ng, Tony; Romine, Paul (JSC-ES611)  
**Subject:** RE: AMS-02 RID status

Thanks Martin

Pat – could you provide a similar 10,000 ft level summary for the RIDs you submitted?

Thanks in advance,

Bobby

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**From:** Maculo, Martin S [mailto:Martin.Maculo@escg.jacobs.com]  
**Sent:** Wednesday, September 01, 2010 11:26 AM  
**To:** Brown, Bobby G. (JSC-MO211); Romine, Paul (JSC-ES611)  
**Cc:** MCDONALD, PATRICK D. (JSC-EA)[Jacobs Technology]; NG, TONY (JSC-EA)[Jacobs Technology]  
**Subject:** RE: AMS-02 RID status

Bobby/Paul,

Here is the status of the RIDs that I created for the CDR. A total of 13 RIDs were submitted. Seven are below with six of them closed.

RID: Loads for the secondary structure have not been defined. Acoustic loads may be a significant driver for stresses and margins of safety for the Tracker Plane 1N support structure.

OPEN: Verbal rationale has been provided that the acoustic loads should be less since the Tracker Plane 1N is stiffer than the previous support structure. The SWG is waiting on e-mail closure for this issue. Based on a review of the SVP the Plane 1N is using 12.0 G for acoustic loads.

RID: CDR package does not discuss which documents have been affected by the Permanent Magnet configuration change. Which documents will be updated? What new documents will be created?

CLOSED: SWG and AMS-02 personnel have met several times and coordinated documents that need to be updated and provided for review. Updates were made to SVP, Fracture/Fatigue, Model information, structural strength (new), etc... The SWG is actively working with AMS-02 to get data and documents as required.

RID: Detailed model results and comparisons to the CM AMS-02 are not provided in CDR package

CLOSED: AMS-02 personnel submitted a comparison of the CM AMS-02 to the PM AMS-02 that adequately satisfies this RID. The results of the comparison will be included in the SWG letter for the AMS-02. SWG reviewed the updated model with AMS-02 and found it to be acceptable with no MUF for VLA.

RID: Coordinate model delivery and OTM recoveries with SWG for new VLA. CM AMS-02 model did not include certain critical recovery points in the VLA.

CLOSED: The VLA model and OTM recoveries were coordinated with the SWG.

RID: Previously performed fatigue, fracture, and structural analysis will need to be reviewed to determine if changes in MLI will affect existing thermal temperatures used in the analysis. On-orbit thermal design changes that impact the structural, fatigue, fracture analysis need to be coordinated with ISS Structures and Mechanisms.

CLOSED: AMS-02 updated the thermal analysis to determine if changes in MLI affect the existing thermal temperatures used in the analysis. The SVP states that "Thermally induced, on-orbit stresses shall be assessed based on the results of the thermal analysis for the permanent magnet configuration."

RID: AMS-02 SVP does not include information regarding the new hardware. The CDR package does not include an SVP for the new hardware.

CLOSED: AMS-02 personnel submitted Rev G of the SVP to SWG on July 22, 2010.

RID: Structural assessment of new hardware is being performed using DCLA results. There is no indication of a model uncertainty factor.

CLOSED: The SWG recommended a MUF of 1.1 for DCLA results. Against recommendations from SWG the AMS-02 project decided to use a 1.0 MUF. For VLA the AMS-02 project is using the MUFs described in the SWG VLA charts. The AMS-02 project understands that any exceedances will have to be handled at VAR.

Thanks,

Martin Maculo

Jacobs Engineering

SSP CI Structures Working Group

281-461-5573

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**From:** Ng, Tony  
**Sent:** Tuesday, August 31, 2010 3:32 PM  
**To:** Maculo, Martin S  
**Cc:** McDonald, Patrick D  
**Subject:** AMS-02 RID status

Martin,

During our tag-up this morning, Paul and Bobby wanted to know the status of the remaining open RIDs.

I remember you guys met with Carl sometime in late July but don't recall seeing if any of the RIDs were closed.

I have email (see attachment) you sent to Bobby last month July22 saying all the RIDs were still open. But this was before you and Pat met with Carl.

Let Paul and Bobby know if any of the remaining RIDs are still open. For the RIDs that were closed, they also wanted to know see our rationale for accepting RID closure similar to what Pat wrote this morning for RID#8.

<< Message: RE: AMS calls concerning delta compatibility review >>

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